



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/765,542	01/26/2004	Itschak Weissman	200208667-1	1619
22879 7590 11/30/2007 HEWLETT PACKARD COMPANY P O BOX 272400, 3404 E. HARMONY ROAD INTELLECTUAL PROPERTY ADMINISTRATION FORT COLLINS, CO 80527-2400			EXAMINER GUARINO, RAHEL	
			ART UNIT 2611	PAPER NUMBER
			MAIL DATE 11/30/2007	DELIVERY MODE PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	Application No. 10/765,542	Applicant(s) WEISSMAN ET AL.	
	Examiner Rahel Guarino	Art Unit 2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 8/27/2007.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1, 2, 4, 7, 8, 10, 13, 14 and 16 is/are rejected.
- 7) ☒ Claim(s) 3, 5, 6, 9, 11, 12, 15, 17 and 18 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

**DETAILED ACTION**

***Response to Arguments***

1. This office action is in response to communication filed on 08/27/07.  
Claims 1, 7 and 17 have been amended. Claims 1-18 are pending on this application.
2. Applicant's amendment overcomes the following objection/rejection:
  - a. Objection to the claims.
  - b. 101 rejection.
3. Applicant's arguments, filed 08/27/2007, with respect to the rejections of claims 1-18 have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Wiessman et al. "ITW2002, Universal Discrete Denoising" in view of Luby US, 6,307,487.

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claim 1,2,4,7,8,10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wiessman et al. "ITW2002, Universal Discrete Denoising" in view of Luby US, 6,307,487.

Re claim 1, an apparatus comprising (universal denoiser);  
a memory for storing a degradation function and a received digital signal comprising an input digital signal that has been corrupted by a channel and a partially corrected sequence of symbols (section II, "notation and conventions"; the clean signal, the observed noise sequence and the reconstruction signal are represented by the values " $A=\{1 \dots M\}$ ") comprising an output of a preliminary denoising system (section VII, A "casual and delay-constrained denoiser") operating on said received digital signal said degradation function providing a measure of the signal degradation that occurs if a symbol having the value I (input symbol) is replaced by a symbol having a value J (output symbol) in said received digital signal (section VII, B "channel uncertainty").  
Wiessman does not teach a controller that generates a processed digital signal from said received digital signal by replacing symbols in said received digital signal.

However, Luby discloses a controller (fig.4 (420)) that generates a processed digital signal from said received digital signal by replacing symbols in said received digital signal (col. 15 lines 42-46), wherein said controller replaces each symbol having a value I in a context of that symbol in said received digital signal with a symbol having a value J if said replacement reduces an estimate of overall signal degradation in said processed digital signal relative to said input digital signal as determined using said degradation function and said partially corrected sequence of symbols (col. 13 lines 49-60).

Therefore, taking the combined teaching of Luby and Wiessman as a whole would have been rendered obvious to one skilled in the art to modify Wiessman to utilize a controller that generates a processed digital signal from said received digital signal by replacing symbols in said received digital signal for the benefit of error correction in a received signal.

Re claim 2, the modified invention as claimed in claim 1, wherein said controller determines the frequency with which instances of one of said symbols in said received signal in one of said contexts is replaced by various symbols in said partially corrected sequence of symbols (col. 17 lines 46-55,"Luby").

Re claim 4, the modified invention as claimed in claim 1; further comprising a denoising system for generating said partially corrected sequence of symbols from said received digital signal (section IV, "complexity of denoiser").

Re claim 7, Wiessman discloses a method for processing a received digital signal comprising an input digital signal that have been corrupted by a channel to generate a processed digital, said method comprising (abstract):

Storing said received digital signal ( section VI," complexity of the universal denoiser"); receiving partially corrected sequence of symbols (section II, "notation and conventions"; the clean signal, the observed noise sequence and the reconstruction signal are represented by the values " $A=\{1 \dots M\}$ ") comprising an output of a preliminary denoising system (section VII, A "casual and delay-constrained denoiser") operating on said received digital signal said degradation function providing a measure of the signal degradation that occurs if a symbol having the value I (input symbol) is replaced by a symbol having a value J (output symbol) in said received digital signal (section VII, B "channel uncertainty").

Wiessman does not teach a controller that generates a processed digital signal from said received digital signal by replacing symbols in said received digital signal.

However, Luby discloses a controller (fig.4 (420)) that generates a processed digital signal from said received digital signal by replacing symbols in said received digital signal (col. 15 lines 42-46), wherein said controller replaces each symbol having a value I in a context of that symbol in said received digital signal with a symbol having a value J if said replacement reduces an estimate of overall signal degradation in said processed digital signal relative to said input digital signal as determined using said degradation function and said partially corrected sequence of symbols (col. 13 lines 49-60).

Therefore, taking the combined teaching of Luby and Wiessman as a whole would have been rendered obvious to one skilled in the art to modify Wiessman to utilize a controller that generates a processed digital signal from said received digital signal by replacing symbols in said received digital signal for the benefit of error correction in a received signal.

Re claim 8, the modified invention as claimed in claim 7, wherein said measure of overall signal degradation depends on the frequency with which instances of one of said symbols in said received signal in one of said contexts is replaced by various symbols in said partially corrected sequence of symbols (col. 17 lines 46-55,"Luby").

Re claim 10, the modified invention as claimed in claim 1, further comprising generating said partially corrected sequence of symbols from said received digital signal (section IV, "complexity of denoiser").

**6. Claim 13,14,16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fitton et al. US 2004/0085917 in view of Luby US, 6,307,487.**

Re claim 13, Fitton discloses a computer readable medium storing (para#34) with a data processing program for processing a received signal comprising an input digital signal that has been corrupted by a channel to generate a processed signal (para#32 and para#35 line 1-5), said data processing program causing a data procession system:

to store said received digital signal (para#12 line 5-8 and para#75 line 15 to next page para#75 line 2);

to receive a partially corrected sequence of symbols comprising an output of a

preliminary denoising system operating on said received digital signal (para#76 line 4-8);

to store information specifying a signal degradation function that measures the signal degradation that occurs if a symbol having the value I is replaced by a symbol having value J (para#75 line 5-15).

Fitton does not teach to generate said processed digital signal by replacing each symbol having a value I in a context of that symbol in said received digital signal with a symbol having a value J.

However, Luby discloses to generate a processed digital signal from said received digital signal by replacing symbols in said received digital signal (col. 15 lines 42-46), wherein said controller replaces each symbol having a value I in a context of that symbol in said received digital signal with a symbol having a value J if said replacement reduces an estimate of overall signal degradation in said processed digital signal relative to said input digital signal as determined using said degradation function and said partially corrected sequence of symbols (col. 13 lines 49-60).

Therefore, taking the combined teaching of Luby and Fitton as a whole would have been rendered obvious to one skilled in the art to modify Fitton to generate a processed digital signal from said received digital signal by replacing symbols in said received digital signal for the benefit of error correction in a received signal.

Re claim 14, modified invention as claimed in Claim 13, wherein said measure of overall signal degradation depends on the frequency with which instances of one of



said symbols in said received signal in one of said contexts is replaced by various symbols in said partially corrected sequence of symbols (col. 17 lines 46-55,"Luby").

Re claim 16, modified invention as claimed in claim 13, wherein said data processing system is also caused to generate said partially corrected sequence of symbols from said received digital signal (para#106 line 1-5).

### ***Allowable Subject Matter***

7. Claims 3, 5, 6, 9, 11, 12, 15,17,18 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rahel Guarino whose telephone number is 571-270-1198. The examiner can normally be reached on M-F (7:30-4:00).

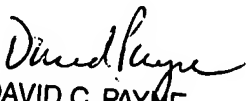
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Payne David can be reached on 571-272-3024. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Application/Control Number:  
10/765,542  
Art Unit: 2611

Page 9

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

RG

  
DAVID C. PAYNE  
SUPERVISORY PATENT EXAMINER